

INTEROFFICE CORRESPONDENCE

DATE October 11, 1994

TO M S Buddy, OU 3 Project Manager, Bldg 080, X8519

FROM *M C Brooks*
M C Brooks, Environmental Quality Support, Bldg 080, X8516

SUBJECT TECHNICAL SUPPORT FOR ENVIRONMENTAL RESTORATION PROGRAM
DIVISION (ERPD) QUALITY ASSURANCE ACTIVITIES SURVEILLANCE REPORT
ON THE HUMAN HEALTH RISK ASSESSMENT FOR OPERABLE UNIT NO 3
(OU 3) - MCB-025-94

DOE Order 5700 6C

Action None

This letter is to formally inform you that a surveillance was performed on the development of the Human Health Risk Assessment for OU 3 Attached is a copy of the report

If you would like to discuss the findings in detail before they are issued, please feel free to contact me at extension 8516

MCB lmw

Attachment
As Stated

cc
K Bentzen - w/o Attach
F Cromack
R S Luker
ERPD Project File (2)

ADMIN RECCRD

 **EG&G ROCKY FLATS**
ENVIRONMENTAL RESTORATION
MANAGEMENT

Environmental Restoration Surveillance Report

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Surveillance Subject

**PROCEDURES FOR EVALUATION AND USE OF DATA IN THE HUMAN HEALTH RISK ASSESSMENT (HHRA)
FOR OPERABLE UNIT 3 (OU3) AT THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)**

Surveillance Scope Evaluate data quality objectives (DQOs) developed in the Work Plan and assess data collection pertinent to the HHRA. Assess correspondence between data collected as part of the Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) and HHRA data needs identified in the RFI/RI Work Plan. Assess procedures for data use and the documentation process to ensure compliance with EG&G ADM-08 02 and Section 3.0 of the QAPjP for the site. Assess applicability of DQOs and RFI/RI data collection to baseline risk assessment data aggregation methodology and the Colorado Department of Public Health and Environment conservative screen for the RFETS as specified by DOE Memorandum ER SRG 03600 (March 30, 1994).

Personnel Contacted CH2M Hill Karen Wiemelt (Project Manager), Julie Reynolds (Risk Assessor), Dennis Smith (Senior Consultant)
EG&G Mark Buddy (OU3 Project Manager)

Documents Reviewed

RFI/RI Final Work Plan for OU3 (EG&G, 1992)
Draft Technical Memorandum No 1 to the Final RFI/RI Work Plan Operable Unit 3 (EG&G, 1993)

Surveillance Team

Team Leader J Burch (S M Stoller)
Team Members M Lewis (S M Stoller)
S Luker (EG&G)

Surveillance Results

Summary

Operable Unit 3 at the Rocky Flats Plant is unique in that the area under investigation is located outside the RFETS boundary, and it includes existing residential and recreational areas. For this reason, environmental restoration (ER) activities are likely to receive a high degree of scrutiny by regulatory agencies and the general public. The HHRA will play a pivotal role in decisions regarding the need for and extent of restoration that occurs at OU3. The objective of this surveillance report is to evaluate the HHRA approach for compliance with EG&G quality assurance and regulatory risk assessment guidance. This surveillance included a review of the documents listed above and an interview held on August 4, 1994, with CH2M Hill (subcontractor to EG&G). Some of the issues identified in this report may be addressed by other documents or by EG&G/DOE sitewide policy. The major findings of this surveillance are presented below followed by specific responses to the items presented in the surveillance checklist (Attachment A).

Surveillance Team The S M Stoller Corporation


ERM, QA Manager

10 11 94
Date

Summary (continued)

The OU3 Work Plan generally conforms to quality assurance protocols established by EG&G and U S Environmental Protection Agency (EPA) guidance for data collection and use in human health risk assessment. The issue of risk integration is central to the HHRA for OU3. Because current or future exposures at OU3 may include sources from other OUs, a strategy should be developed that clearly describes the approach to be taken for assessing risks at each OU separately and for assessing risks associated with multiple sources, such as for offsite receptors at OU3. Another recommendation is that the subcontractor should develop a written protocol for review and analysis of future data as described in the Work Plan. This review should be coupled with a revised process for selecting or excluding media or analytes from the sampling program. The revised selection process should include more explicitly defined criteria for selection of media or chemical analyte groups. Finally, it is recommended that the current approach for assessment of human health risks associated with groundwater and biota be re-evaluated.

DISCUSSION

Item 1A Requirement Confirm that a conceptual site model was developed and used for identifying HHRA sampling needs.

The authors provide an excellent summary of historical investigations performed in areas now corresponding to OU3. Based on this and related information, a detailed series of diagrams was provided in the Work Plan outlining the conceptual site model for OU3. The conceptual site model describes contaminant sources, transport pathways, and exposure routes for human receptors that may be exposed to compounds from the Rocky Flats site. This model was then used to develop DQOs and data needs for the HHRA, which are summarized in Table 5-1 of the Work Plan.

Item 1B Requirement Confirm that data uses for HHRA were clearly defined.

The field sampling plan in Section 6 of the Work Plan described the media and analytes to be sampled at OU3. Table 6-1 of the Work Plan identifies which exposure pathways of the conceptual site model were addressed by specific sampling activities. It is assumed that future documents related to the HHRA (e.g., the Exposure Assessment Technical Memorandum) will define specific HHRA data uses. It is unclear how data will be used to assess risks for certain exposure pathways (see below and Item 1C).

The Work Plan and Technical Memorandum indicated that analysis of the inhalation exposure pathway will incorporate information collected from existing air monitoring stations, new high-volume air samplers, and data derived from the wind tunnel study. However, specific data uses were unclear. Discussion with the subcontractor indicated that risks associated with inhalation exposures will be characterized using surface soil data and dispersion modeling and that the above data sources will play a minor, primarily qualitative, role in the HHRA.

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There are a number of questions associated with the collection and use of the wind tunnel data. How are plutonium or other surface soil contaminants distributed across different particle sizes? Was sampling performed during initial startup of the wind tunnel (prior to visible wind erosion) to characterize potential dispersion of smaller particles (i.e., was radionuclide dispersion occurring in the wind tunnel prior to the initiation of sampling)? Was soil moisture content measured? How do the wind speeds tested correspond to meteorological conditions in that area? How will the data from repeated testing be used? How will the data obtained from the wind tunnel study be applied to other areas at OU3? Are the data collected representative of the entire OU? How will steeper terrain be handled?

Recommendations Future documents associated with the HHRA (i.e., Technical Memoranda for exposure pathways and modeling) should include a detailed description of how data (including air monitoring and the wind tunnel study) will be used to assess risks associated with the inhalation pathway. The above questions pertaining to the wind tunnel study should be evaluated in the context of how they might impact the HHRA for OU3.

Item 1C Requirement Confirm that sampling media and sample locations relevant to the HHRA (i.e., exposure pathway and receptor-specific samples) were identified.

Groundwater Pathways

Although the need for evaluation of the groundwater exposure pathway was established as a DQO, the evaluation of offsite residential wells as a potential exposure pathway was rejected from further consideration in the Work Plan based on the results of the preliminary risk assessment for OU3 (EG&G, 1991). However, the Work Plan states that the data evaluated and used in the preliminary risk assessment were considered unacceptable for the HHRA. Thus, it is unclear how the preliminary risk assessment formed the basis of that decision. Furthermore, in referring to the preliminary risk assessment, the HHRA Plan states that "the preliminary qualitative assessment used existing information to make judgements concerning the potential exposure pathways and to identify plausible exposure pathways" and that "These judgements are not used to eliminate potential exposure pathways from evaluation in the RFI/RI" (EG&G, 1992, Sect. 7, p. 5). These discrepancies should be clarified.

The subcontractor indicated that there are currently no plans to evaluate potential risks due to groundwater ingestion in offsite residents with domestic groundwater wells less than 1 mile from the RFETS boundary. During the interview, the subcontractor indicated that installation of monitoring wells east of Indiana Street was originally planned but that the regulatory reviewers indicated that there was no need. Instead, the existing plan was put in place, which calls for the installation of four groundwater monitoring wells immediately downgradient of Great Western Reservoir and Standley Lake even though the Work Plan states that "No evidence has been observed in past studies of Great Western Reservoir or Standley Lake of solubilization and leaching of plutonium downward in the sediment column towards the groundwater table" (EG&G, 1992, Sect. 2 p. 99). The subcontractor indicated that this decision was also driven by the regulatory agency review.

The HHRA Plan states that "the work plan emphasizes collecting data at exposure points where possible." The locations of these exposure points, existing receptors, and the correspondence of samples to exposure points are not described. The proposed sample locations presented in the Work Plan for surface water, sediment, and surface soil appear to be sufficient for characterizing risks associated with receptors in the OU3 vicinity. However, this is not the case for the potential groundwater ingestion pathway, as there are no plans to evaluate risks in residential well users immediately east of the plant boundary.

Biological Pathways

Based on a review of the Work Plan, it is unclear how exposure pathways associated with biota will be evaluated in the HHRA. The HHRA Plan states that "Data to determine if fish are accumulating contaminants can be used to estimate exposures and risk from fish ingestion" (EG&G, 1992, Sect 7, p. 9). Discussions with the subcontractor indicated that there were no plans to quantitatively evaluate fish ingestion at OU3. This decision was based on the results of a previous study performed by the Colorado Department of Public Health and Environment (CDPHE) (CDH, 1990) even though the Historical Information Summary (EG&G, 1991) that reviewed this study concluded that the data were not usable for risk assessment. In addition, the CDPHE study concluded that "Additional in-depth monitoring at Standley Lake, as well as monitoring of pollutants in fish from other Front Range lakes, should be undertaken to confirm these results and provide comparative information" (CDH, 1990, p. 1).

There are several other noteworthy uncertainties associated with this potential exposure pathway. First, the CDPHE study was performed only in Standley Lake. Some studies indicate that mean plutonium sediment concentrations are more than an order of magnitude lower in Standley Lake than those in Great Western Reservoir (see Work Plan Table 2-3 vs. 2-4). It is not yet known how contaminant concentrations in sediment, surface water, or biota from Mower Reservoir compare to those in Standley Lake. Second, Great Western (until recently) and Mower reservoirs receive nearly all their surface water flows from the Rocky Flats site, in contrast to Standley Lake, which receives only about 4%. The above information suggests that other contaminants may have accumulated in Mower and Great Western to a greater extent than in Standley Lake, possibly resulting in greater bioaccumulation in fish.

In addition, cattle that are watered at Mower Reservoir represent another potential exposure pathway with incomplete information. Are these dairy cattle or beef cattle? Are they solely for consumption by the landowner or for local consumption? What is the estimated bovine uptake of contaminants via inhalation of surface soil and ingestion of native plants and surface water? Does this represent a complete exposure pathway?

Recommendations The decision of whether to install additional monitoring wells east of Indiana Street was apparently made during development of the Work Plan and resulted from an agreement with EPA/CDPHE personnel. If so, the agreement and rationale should be documented and such documentation should be provided for review. In any case, the need for evaluation of potential exposure pathways associated with groundwater merits further consideration. The proximity of nearby residential wells to groundwater monitoring wells with consistent detections at concentrations approaching or exceeding drinking water standards indicates that this issue should receive immediate attention. Furthermore, potential risks associated with groundwater ingestion should be included in the HHRA for residents with

domestic wells in this area. For example, the average concentration of gross alpha activity in the bedrock aquifer is 37 66 pCi/l, more than double the drinking water standard of 15 pCi/l, and the maximum concentration (170 pCi/l) is more than tenfold higher (EG&G, 1992, Appendix B, Table B-2). The detection frequencies for all radionuclides presented in Table B-2 are between 75% and 100%. The average concentrations of methylene chloride and several metals also exceed the Safe Drinking Water Act maximum contaminant levels.

Evaluation of the groundwater pathway at OU3 should include characterization of the locations, uses, and depths of residential wells in the OU3 vicinity, hydrogeological assessment of the potential fate of contaminants detected in boundary monitoring wells along Indiana Street, and a review of more recent data obtained from the boundary wells to include an evaluation of time trends. An approach for characterizing potential risks associated with groundwater use should be developed for the HHRA. This could include modeling of contaminant transport from existing monitoring wells to receptor locations, installation of new monitoring wells east of Indiana Street, or sampling and analysis of existing residential wells in addition to the items mentioned above.

The HHRA should evaluate exposure pathways related to biota. The approach should be outlined to include the types of data to be collected/evaluated and the criteria that will be used to determine whether the available information is sufficient to evaluate this pathway. The CDPHE study identified several metals (selenium, mercury, and cadmium) present in fish at concentrations that approached the level of concern. These metals and other contaminants detected in the reservoirs at concentrations exceeding background should be evaluated for their potential to bioaccumulate in fish. Such an evaluation should focus on the potential contribution of contaminants from Rocky Flats. Potential risks associated with fish ingestion should be quantitatively evaluated if evidence for bioaccumulation or toxicity in aquatic organisms is identified. In addition, potential exposures associated with cattle in the vicinity of Mower Reservoir should be evaluated.

Item 1D Requirement Confirm that sampling needs for modeling parameters were considered and identified, as necessary (e.g., surface soil particle size distribution).

No reference was made regarding the use of models to estimate exposure point concentrations in any medium other than air. This will probably be decided during the data evaluation phase of the HHRA. Thus, it is uncertain whether the field sampling plan has met modeling requirements.

Recommendations It is assumed that future documents associated with the HHRA (i.e., Technical Memoranda for exposure pathways and modeling) will include a detailed description of additional sampling needs to support modeling for the HHRA, if any. The use of data for air modeling and risk assessment should be described in more detail (see item 1B).

Item 1E Requirement Confirm that method detection limits appropriate for the HHRA were considered and documented.

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Method detection limits for analytes in each medium should be below toxicologically relevant benchmark concentrations. This level was established in Table 5-3 of the Work Plan as 20% of the concentration of concern. No documentation of such a comparison was presented in the Work Plan or was available from the subcontractor.

Recommendations A comparison of method detection limits with toxicological benchmarks could be performed for a sitewide analyte list derived from the GRAASP or could be performed by each subcontractor as part of the chemical of concern Technical Memorandum. Such a comparison should be provided for the OU3 HHRA.

Item 1F Requirement Confirm that the appropriate analytical level (Level IV) was selected for data to be used in the HHRA.

Analytical Level IV or greater was specified in the Work Plan for data used in the HHRA.

Item 1G Requirement Confirm that the analyte list is appropriate for the HHRA.

The OU3 Work Plan generally conforms to QA protocols and data collection guidance for human health risk assessment. However, there are several cases where it is unclear how the currently planned approach to the HHRA will result in a "comprehensive quantitative assessment of all contaminants of concern and potential exposure pathways" as stated in the Work Plan (EG&G, 1992, Sect. 7, p. 10). The subcontractor indicated in the interview that a medium-based approach, which is designed to screen the sampled media for chemicals of concern prior to identification and selection of health risk exposure pathways, is now being used rather than the approach outlined in the Work Plan, which identified specific exposure pathways (in accordance with risk assessment guidance) to target for sample collection and analysis. By eliminating certain analyte groups or environmental media from the sampling plan, the subcontractor risks excluding related exposure pathways from the quantitative risk assessment, which is precisely what the DQO process is supposed to avoid.

The selection of media and analytes for the field sampling plan influences the development of a comprehensive HHRA. Although criteria for inclusion of chemical analytes or media in the field sampling plan were presented in the Work Plan, these criteria were not well defined and appear to have been applied inconsistently. As a result, certain exposure pathways or analytes were eliminated from further consideration prior to a quantitative evaluation in the HHRA because they were excluded in the selection process for the field sampling plan. In some cases, this was perhaps justifiable but in other cases the data were ambiguous or unavailable. Such an approach could lead to an underestimation of potential health risks even if the medium or chemical group that was eliminated did not contain sufficient contamination to exceed regulatory benchmarks. This is because risk assessment guidelines assume that the estimated risks for each chemical and exposure pathway are additive, which means that even subthreshold risks may eventually sum up to a total risk that exceeds the level of concern.

An example of this is the approach taken for evaluation of the groundwater exposure pathway. Boundary well groundwater data presented in Appendix B of the Work Plan indicated that several constituents exceeded drinking water standards and that site-related radionuclides have been detected in the bedrock and alluvial

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aquifers at high frequencies (90-100%) As specific criteria for inclusion or exclusion of this pathway based on the Appendix B data were not provided, it is unclear how this information factored into the decision to exclude quantitative evaluation of groundwater in residences east of the plant boundary In another case, atrazine was detected in surface water at a much lower frequency (44%) and at concentrations below the drinking water standard but was nonetheless included in the field sampling program

The criteria for selection of sampling media or analytes did not allow for consistent application of this process because the classification scheme for including or excluding analytes (i.e., Cases 1, 2, and 3) was not explicitly defined For example, the definition for Case 3 states "The tabulation demonstrates consistent detections of one or more chemicals " To avoid ambiguity, the definition could specify a detection frequency for inclusion in Case 3 (e.g., greater than 50%) The Work Plan states that "Elimination of the groups where historical data fits Case 2 requires an assessment of data quality, chemical fate and transport, and human and environmental risks posed by the chemicals" (EG&G, 1992, Sect 6, p 12) This implies that risk assessment should be performed but does not define how risks should be assessed or what criteria should apply

There were several cases where organic compounds were excluded from further analysis because they were suspected as lab blank contamination This is often the case for some of these compounds, such as methylene chloride, although the data review summary (Section 6.2.2) indicates that data with blank contamination were excluded from Appendix B Thus, blank contamination should not have been an issue for data presented in Appendix B

Recommendations Some of the inconsistency in the selection of media and analytes for sampling could be avoided by the application of more specific criteria Specific tolerances or criteria could be developed that would trigger the need for sampling of a given compound or medium (for example, a minimum detection frequency or minimum number of analyses for certain chemical groups) These criteria could be designed to address the various objectives of the RFI/RI (e.g., risk assessment, environmental evaluation, or nature and extent characterization) and could be applied to each of the OUs on a sitewide basis Criteria could also be prioritized or weighted so that in some cases an exceedance of only one specific criterion might trigger the need for sampling whereas another less important criterion might be coupled to additional criteria so that multiple exceedances would be required to trigger the need for sampling

The Work Plan indicates that the field sampling program will be re-evaluated using more current data Such a review should include volatile organic compounds in surface water, sediments, and groundwater as some of these are site-related contaminants Evaluation of the potential trends in concentration and detection frequency over time would help reduce some of the uncertainties associated with the data

Item 1H Requirement Confirm that the number of samples selected was adequate to meet the DQOs and that the appropriate justification and documentation were provided

The number of samples selected for surface water, sediment, and surface soil appear to be sufficient and appropriately documented in the Work Plan No analysis was provided of the statistical power achieved by the number of samples chosen for biota and groundwater sampling In addition, no evaluation of the statistical

power associated with planned air monitoring was performed. This is apparently because the air monitoring data will not be used quantitatively for risk assessment.

Recommendations An evaluation of statistical power should be performed for the sample numbers selected for biota and groundwater.

Item 1I Requirement Confirm that the DQO summary form from the QAPjP (Figure A 1 6) was completed and included with the Work Plan documentation.

This form was not included in the Work Plan although the information included in the form was adequately documented in the Work Plan.

Item 2A Requirement Confirm that only data validated according to ADM-08 02 and Section 3 0 of the QAPjP are being used for the HHRA and are properly documented.

A validated data base has been developed for use in the HHRA. An Appendix to the Technical Memorandum for selection of chemicals of concern (TM4) documents the development of this data base. TM4 is currently in draft form and is under review by EG&G. There are also a series of internal quality control checks that were performed by the subcontractor and are documented in the form of memoranda (see nature and extent surveillance report). No comprehensive procedures were applied to evaluate the work of the data validation subcontractor. However, some anomalies were identified and investigated on an individual basis.

Recommendations Follow-up will be required to ensure that the validated and usable data are included in the HHRA as work progresses. A process should be in place for performing quality control checks on the data validation subcontractor.

Item 2B Requirement Confirm that screening of data against background concentrations was performed using Gilbert methodology and was properly documented.

Quantitative screening of data against background concentrations using the Gilbert methodology is being performed for surface soils data only. A memorandum is under preparation by the subcontractor documenting the quality control for these statistical calculations. Comparison of surface water and sediment data with background concentrations will be performed using a qualitative "weight of evidence" approach. This deviation has been approved by the regulatory agencies and is documented in meeting minutes according to the subcontractor. TM4 presents the methods used for background comparisons and the results obtained. Groundwater data will not be compared to background samples using the Gilbert methodology, as the amount of data is insufficient for a valid statistical comparison and because the hydrogeology of the background data is not similar enough to that of the OU3 wells.

Item 2C Requirement Confirm that chemicals detected in laboratory blanks were excluded per QAPjP procedures.

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The subcontractor must rely on the data validation subcontractor (Quantaletx) to exclude blank data in an appropriate fashion. It was uncertain whether Quantaletx had prepared a data validation report for OU3.

Item 2D Requirement Confirm that exposure point concentrations were properly calculated and documented.

This step had not yet been performed at the time this surveillance was prepared. Thus, this item was not included in the surveillance.

Item 3A Requirement Confirm that PARCC parameters were met and documented appropriately.

The PARCC parameters were described in the Work Plan. Completeness was not defined and there was no explanation of how completeness will be calculated. According to the subcontractor, some of the requirements in ADM-08 02 are different than those specified in the Work Plan. The subcontractor plans to ask EG&G whether ADM-08 02 should be considered final prior to incorporating those requirements.

Recommendations The contractor should explain how completeness will be calculated and assessed. The applicability of ADM-08 02 should be clarified and any modifications in PARCC parameter evaluation should be documented.

Item 3B Requirement Confirm that sample analyses were performed according to the GRAASP.

The Work Plan specifies that analyses will be performed according to the GRAASP. This was verbally confirmed by the subcontractor. Further confirmation of the analytical methods used would have to come from the data validation subcontractor.

Item 3C Requirement Confirm that modeling calculations are documented and presented per QAPjP requirements.

To date, no modeling has been performed as part of the HHRA. Thus, this item was not included in the surveillance.

Item 4A Requirement Confirm that the CDPHE risk screen was appropriately performed and documented.

The CDPHE risk screen was under preparation at the time this report was prepared. Thus, this item was not included in the surveillance.

Item 4B Requirement Confirm that data are documented and presented so that chemical sources, areas of concern, and exposure areas can be readily identified and incorporated into the HHRA.

These procedures were under way at the time this report was prepared. Thus, this item was not included in the surveillance.

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Item 4C Requirement Confirm that documentation of agency approvals has been obtained at the appropriate steps of the HHRA

No HHRA documents have been submitted to the regulatory agencies as part of the OU3 RFI/RI. The Work Plan received approval and was documented by a letter from the EPA to the DOE (requested from subcontractor).

The Draft Technical Memorandum to the Work Plan has apparently not been finalized. Documentation for approval of this Technical Memorandum should be obtained.

ADDITIONAL COMMENTS

It is unclear how risks associated with sources of contamination located at other OUs will be integrated for offsite receptors (in the vicinity of OU3). This is an important distinction that affects the characterization of risks at OU3 and the interpretation of those risks for environmental restoration decisions. The subcontractor indicated that the HHRA for OU3 will only assess exposures associated with contamination identified at the OU3 Individual Hazardous Substances Sites (IHSSs). If this is the case, then it may be assumed that "future site use" exposure scenarios in the OU3 HHRA will not take into account potential transport of contaminants from onsite sources. It is likely that the HHRAs for the other OUs will address such future use scenarios for offsite receptors. However, it is unclear how the risks associated with each OU will be combined at offsite receptor locations or how the contribution of risk from each source will be allocated. If such an integration of risk is not performed, then the risks at offsite receptor locations may be underestimated. The subcontractor indicated that there are plans for a combined risk assessment that will likely address these issues. The scope of the OU3 HHRA should clearly state whether risks to offsite (OU3) receptors reflect the contribution from the various OUs onsite and how risks from the various OUs will be integrated for receptors at OU3. A policy explaining the role of integrated site risks in environmental restoration decisions should be in place prior to development or completion of any OU or sitewide risk assessments.

The Work Plan and the Technical Memorandum make numerous references to future review of newly acquired data from sources such as the RFI/RI reports for other OUs. One of the reasons for these reviews is to evaluate the need for resampling at OU3 to include specific chemical groups or exposure pathways that were previously excluded. However, there is no description of how such an evaluation will be performed, no list specifying what documents will be reviewed, no specific criteria established for determining whether the reviewed data would indicate the need for further action at OU3, and no discussion of how such reviews might impact the schedule of the HHRA for OU3. The subcontractor indicated that some surface soil data from investigations at OUs 1 and 2 have been evaluated but that such reviews had not been documented. The subcontractor also noted that there were plans to review technical memoranda for the selection of chemicals of concern at other operable units but that none of these memoranda have been approved by the regulatory agencies to date. It was uncertain how the timing of these reviews would coincide with the timing of the HHRA preparation and submittal. A plan should be developed that explains what additional data will be reviewed (as indicated in the Work Plan), how such a review will be performed, and how the above issues will be addressed.

The Work Plan also states that one objective of the OU3 RFI/RI is to confirm the results of previous historical investigations and include those data if they are confirmed. However, there is no discussion as to which

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studies/data will be compared to RFI/RI data, how such comparisons will be performed, or what criteria shall be applied to determine whether historical data are acceptable for inclusion in the RFI/RI. The subcontractor indicated that there are two sets of historical data that are currently planned for verification: the "Setlock" data of sediments from the reservoirs and surface soils data from the remedy acreage. Future documentation associated with the HHRA should describe why these data were selected for inclusion in the RFI/RI and why other studies were not, what the process of selection was from available historical data, what evaluation/comparison procedures were used and what criteria were applied to include/exclude the data.

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REFERENCES

EG&G Rocky Flats Plant RFI/RI Final Work Plan Operable Unit 3 Prepared for the U S Department of Energy
Rocky Flats Plant Golden, CO February 1992

EG&G Rocky Flats Plant Draft Technical Memorandum No 1 to the Final Work Plan Operable Unit 3 Prepared
for the U S Department of Energy Rocky Flats Plant Golden, CO April 1993

Colorado Department of Health (CDH) Standley Lake Fish Toxics Monitoring Report (1990) Denver, CO 1990

EG&G Rocky Flats Plant Final Historical Information Summary and Preliminary Health Risk Assessment
Operable Unit No 3 Prepared for the U S Department of Energy Rocky Flats Plant June 1991